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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/594,742	09/28/2006	Shigeya Naritsuka	070456-0153	4940

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EXAMINER	
SAYADIAN, HRAYR	
ART UNIT	PAPER NUMBER
2814	
MAIL DATE	DELIVERY MODE
09/01/2010	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/594,742	NARITSUKA ET AL.	
	Examiner	Art Unit	
	HRAYR A. SAYADIAN	2814	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 June 2010*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-12* is/are pending in the application.

4a) Of the above claim(s) *3,6,7,9 and 10* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,4,5,8,11 and 12* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *28 September 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *9/28/06;3/13/07;7/20/09;12/4/09*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED OFFICE ACTION

Unity of Invention

1. The 6/25/2010 and 2/9/2010 elected without traverse inventions of claims 1, 2, 4, 5, 8, 11, and 12. The Lack of Unity of Invention Requirements are proper and they are hereby made final.

35 U.S.C. § 103 Rejections of the Claims

2. The following is a quotation of 35 U.S.C. § 103(a), the basis for the obviousness rejections in this Office Action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section § 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1, 2, 4, 5, 8, and 11 are rejected under 35 U.S.C. § 103(a) as being unpatentable over WO Publication No. WO03/105295 (Published February 6th, 2003; PGPUB US 2004/0206975 for an application by "Tojo" is given as the equivalent English translation) in view of U.S. Pat. No. 5,751,013 to "Kidoguchi."

Tojo discloses all of the limitations of the claims, including a Gap Substrate (1, see paragraphs [0024] and [0040]), an active layer (5; see, paragraph [0040]), and an ELO layer (2; see paragraph [0040]) between the active layer and the substrate.

Tojo appears to fail to explicitly disclose the active layer including an n-type layer and a p-type layer of a compound semiconductor.

This feature however is well known in the art.

For example, Kidoguchi, column 9, line 59 to column 10, line 2, teaching using alternating n and p doped layers within the active layer so that "electrons and holes are spatially separated from each other. Therefore, the recombination probability increases and the emission efficiency is enhanced by an order of magnitude compared with the case where electrons and holes are not spatially separated from each other."

Therefore, it would have been obvious for one of ordinary skill in the art at the time of this invention to have modified the active layer Tojo teaches so that it includes alternating n and p-type layers to enhance the emission efficiency, as Kidoguchi teaches.

With respect to claim 2, a growth supporting layer located (the series of disconnected rectangles shown in the front page figure, for example) under and in contact with the ELO layer 2, and discloses the ELO layer filling (at least above) a window (opening) portion in the growth supporting layer, and discloses the ELO layer growing laterally abutting on the growth supporting layer.

With respect to claim 4, Tojo discloses the growth-supporting layer in contact with the substrate.

With respect to claim 5, Tojo discloses the window portion being arranged linearly and having a pattern that is periodic.

With respect to claim 8, the recitation includes conductor, which has a scope not excluding any material because all materials conduct to some specific level (even an insulator conducts, for example, when it shorts).

With respect to claim 11, Tojo discloses using a GaN ELO layer in a nitride based light emitting device, But fails to explicitly disclose making the ELO layer one of the enumerated materials when the substrate is GaP or when the light emitting device is other than nitride based. This feature would have been obvious however when making the light emitting device other than Nitride based or when making the substrate GaP at least to insure better lattice matching with the GaP substrate or the non-GaN based light emitting device.

4. Claim 12 is rejected under 35 U.S.C. § 103(a) as being unpatentable over "Tojo" in view of "Kidoguchi," further in view of PGPUB US 2004/0183090 for a patent application by "Kitaoka."

Tojo discloses using MOCVD and the like to grow the nitride layers, but fails to explicitly disclose using LPE to grow the ELO layer.

The art however recognizes that LPE is usable in addition to MOCVD and the like growth methods to grow ELO layers. See, for example, Kitaoka, paragraph [0008]. And according to patent law precedents (see, M.P.E.P. § 2144.06; combining or substituting features known to be equivalent for a specific purpose) it would be prima facie obvious to combine or substitute equivalents.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention of this application to have used LPE in addition to MOCVD or instead of MOCVD to grow the ELO layer.

CONCLUSION

5. A shortened statutory period for reply to this Office Action is set to expire **THREE MONTHS** from the mailing date of this Office Action. Applicant is reminded of the extension of time policy as set forth in 37 CFR § 1.136(a).

Any inquiry concerning this communication or earlier communications from an Examiner should be directed to Examiner Hrayr A. Sayadian, at (571) 272-7779, on Monday through Friday, 7:30 am – 4:00 pm ET.

If attempts to reach Mr. Sayadian by telephone are unsuccessful, his supervisor, Supervisory Primary Examiner Wael Fahmy, can be reached at (571) 272-1705. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available only through Private PAIR.

For more information about the PAIR system, see http://pair-direct.uspto.gov. The Electronic Business Center (EBC) at (866) 217-9197 (toll-free) may answer questions on how to access the Private PAIR system.

/Hrayr A. Sayadian/
Patent Examiner, Art Unit 2814